## NEW CLAIMS 80-136

80. A method for the transmission of data in a synchronous digital hierarchy (SDH) network, comprising the steps of: transmitting to a node of the SDH network a concatenated data signal from outside the SDH network, converting the signal into a virtually concatenated information structure, and transporting the signal through the SDH network in the virtually concatenated information structure, the converting step including the step of processing a path overhead of the signal by using a part of the path overhead to indicate a sequence of frames in the virtually concatenated information structure.

81. The method of claim 80, comprising the step of converting the signal so transported into a signal of the same form as the concatenated signal transmitted to the node of the SDH network, the converting step including the step of processing the path overhead of the signal by restoring said part of the path overhead used to indicate the sequence of the frames in the virtually concatenated information structure.

82. The method of claim 80, wherein the concatenated signal transmitted to the SDH network from outside the SDH network is in contiguously concatenated form.

83. The method of claim 80, wherein the concatenated signal from outside the SDH network comprises a virtual container four (VC-4) or virtual container three (VC-3) or an administrative unit three (AU3).

84. The method of claim 83, wherein the path overhead comprises bytes H4, J1 and B3, wherein the VC-4 and VC-3 comprise a plurality of the frames, and the step of processing the path overhead includes the steps of using byte H4 for indicating the sequence of the frames

within the VC-4 or VC-3, using byte J1 to indicate an order of VC-4s or VC-3s in the virtually concatenated information structure, and correcting, as necessary, error indication information carried in byte B3.

85. The method of claim 84, wherein the transmitting step transmits the concatenated signal in the form comprising four contiguously concatenated VC-4s, and wherein the processing step processes the four VC-4s into the virtually concatenated information structure comprising virtually concatenated VC-4s for transfer across the SDH network.

86. The method of claim 84, wherein the transmitting step transmits the concatenated signal in the form comprising five contiguously concatenated VC-3s, and wherein the processing step processes the five VC-3s into the virtually concatenated information structure comprising virtually concatenated VC-3s for transfer across the SDH network.

87. The method of claim 85, comprising the step of aligning the virtually concatenated virtual containers (VCs) of the virtually concatenated information structure using a buffer.

88. The method of claim 87, comprising the step of controlling the aligning step according to contents of bytes J1 and H4.

89. The method of claim 85, comprising the steps of switching and transmitting the VC-4 or VC-3 frames of the virtually concatenated information structure through the SDH network together in a single synchronous transfer module (STM) or in multiple STMs and via a same route.

90. The method of claim 80, wherein the concatenated signal from outside the SDH network comprises a virtual container two (VC-2) or a virtual container one (VC-1).

91. The method of claim 90, wherein the path overhead comprises bytes V5, J2, N2 and K4, and wherein the step of processing the path overhead includes the step of transferring contents of the path overhead bytes to unused parts of the signal.

92. The method of claim 91, wherein the transmitting step transmits the concatenated signal in the form comprising two or more contiguously concatenated VC-2s or VC-1s, and wherein the processing step processes the VC-2s or VC-1s into the virtually concatenated information structure comprising virtually concatenated VC-2s or VC-1s for transfer across the SDH network.

93. The method of claim 92, comprising the step of aligning the virtually concatenated VCs of the virtually concatenated information structure using a buffer.

94. The method of claim 93, comprising the step of controlling the aligning step according to contents of the path overhead byes transferred to the unused parts of the signal.

95. The method of claim 92, in which the contiguously concatenated VC-2s or VC-1s received from outside the SDH network comprise a plurality of the frames in a set sequence, and in which the set sequence of the frames changes while being transported through the SDH network, and comprising the step of re-ordering the frames into the set sequence as required.

96. The method of claim 92, in which the VC-2s and VC-1s comprise a plurality of the frames, and the steps of switching and transmitting the VC-2 or VC-1 frames

of the virtually concatenated information structure through the SDH network together in a single synchronous transfer module (STM) or in multiple STMs and via a same route.

97. The method of claim 80, comprising the step of recognizing a receipt of the signal in concatenated form by the SDH network.

98. A synchronous digital hierarchy (SDH) network in which data is carried in a virtually concatenated information structure, the network comprising: tributary cards arranged and configured to process signals received in a contiguously concatenated form to convert them into a virtually concatenated form for transfer across the network.

99. The network of claim 98, wherein the tributary cards are arranged and configured to process the signals transferred across the SDH network in the virtually concatenated form and to convert them into the contiguously concatenated form.

100. The network of claim 99, wherein the signals in the virtually concatenated form comprise virtual containers (VC), and wherein the tributary cards comprise one or more buffers for aligning said VCs.

101. The network of the claim 98, wherein the tributary cards are configured and arranged to detect the receipt of signals in the contiguously concatenated form by detecting a concatenation indication of the signals received.

102. A method for the transmission of data in a synchronous digital hierarchy (SDH) network, comprising the steps of: transmitting to a node of the SDH network a contiguously concatenated data signal from outside the SDH network, converting the signal

into a virtually concatenated information structure, and transporting the signal through the SDH network in the virtually concatenated information structure, the converting step comprising the step of processing a path overhead of the signal by using a part of the path overhead to indicate a sequence of frames in the virtually concatenated information structure.

103. The method of claim 102, comprising the step of converting the signal so transported into a signal of the same form as the contiguously concatenated data signal transmitted to the node of the SDH network, the converting step comprises the step of processing the path overhead of the signal by restoring said part of the path overhead used to indicate the sequence of the frames in the virtually concatenated information structure.

104. The method of claim 102, wherein the contiguously concatenated data signal from outside the SDH network comprises virtual container four (VC-4) or virtual container three (VC-3) or an administrative unit three (AU3).

105. The method of claim 104, wherein the path overhead comprises bytes H4, J1 and B3, wherein the VC-4 and VC-3 comprise a plurality of the frames, and the step of processing the path overhead includes the steps of using byte H4 for indicating the sequence of the frames within the VC-4 or VC-3, using byte J1 to indicate an order of VC-4s or VC-3s in the virtually concatenated information structure, and correcting, as necessary, error indication information carried in byte B3.

106. The method of claim 105, wherein the transmitting step transmits the contiguously concatenated data signal in the form comprising four contiguously concatenated VC-4s,

and wherein the processing step processes the four VC-4s into the virtually concatenated information structure comprising virtually concatenated VC-4s for transfer across the SDH network.

107. The method of claim 105, wherein the transmitting step transmits the contiguously concatenated data signal in the form comprising five contiguously concatenated VC-3s, and wherein the processing step processes the five VC-3s into the virtually concatenated information structure comprising virtually concatenated VC-3s for transfer across the SDH network.

108. The method of claim 106, comprising the step of aligning the virtually concatenated virtual containers (VCs) of the virtually concatenated information structure using a buffer.

109. The method of claim 108, comprising the step of controlling the aligning step according to contents of bytes J1 and H4.

110. The method of claim 106, comprising the steps of switching and transmitting the VC-4 or VC-3 frames of the virtually concatenated information structure through the SDH network together in a single synchronous transfer module (STM) or in multiple STMs and via a same route.

111. The method of claim 102, wherein the contiguously concatenated data signal from outside the SDH network comprises a virtual container two (VC-2) or a virtual container one (VC-1).

112. The method of claim 111, wherein the path overhead comprises bytes V5, J2, N2 and K4, and wherein the step of processing the path overhead includes the step of transferring contents of the path overhead bytes to unused parts of the signal.

113. The method of claim 112, wherein the transmitting step transmits the contiguously concatenated data signal in the form comprising two or more contiguously concatenated VC-2s or VC-1s, and wherein the processing step processes the VC-2s or VC-1s into the virtually concatenated information structure comprising virtually concatenated VC-2s or VC-1s for transfer across the SDH network.

114. The method of claim 113, comprising the step of aligning the virtually concatenated VCs of the virtually concatenated information structure using a buffer.

115. The method of claim 114, comprising the step of controlling the aligning step according to contents of the path overhead byes transferred to the unused parts of the signal.

116. The method of claim 113, in which the contiguously concatenated VC-2s or VC-1s received from outside the SDH network comprise a plurality of the frames in a set sequence, and in which the set sequence of the frames changes while being transported through the SDH network, and comprising the step of re-ordering the frames into the set sequence as required.

117. The method of claim 113, in which the VC-2s and VC-1s comprise a plurality of the frames, and the steps of switching and transmitting the VC-2 or VC-1 frames of the virtually concatenated information structure through the SDH network together in a single synchronous transfer module (STM) or in multiple STMs and via a same route.

118. The method of claim 102, comprising the step of recognizing a receipt of the signal in concatenated form by the SDH network.

119. A synchronous digital hierarchy (SDH) network in which data is carried in a virtually concatenated information structure, the network comprising: tributary interfaces arranged and configured to process a signal received in a contiguously concatenated form to convert the signal

into a virtually concatenated form for transfer across the network, the tributary interfaces comprising means for processing a path overhead of the signal including means for using a part of the path overhead to indicate a sequence of frames in the virtually concatenated information structure.

120. The network of claim 119, wherein the tributary interfaces are arranged and configured to process the signal transferred across the network in the virtually concatenated form and to convert the signal into the contiguously concatenated form.

121. The network of claim 120, wherein the signal in the virtually concatenated form comprises virtual containers (VC), and wherein the tributary interfaces comprise one or more buffers for aligning said VCs.

122. The network of claim 119, wherein the tributary interfaces are configured and arranged to detect a receipt of the signal in the contiguously concatenated form by detecting a concatenation indication of the signal received.

123. A method for the transmission of data in a virtually concatenated information structure comprising a path overhead and a plurality of frames, the method comprising the steps of: transmitting the data in a sequence of the frames, and using a part of the path overhead to indicate the sequence of the frames in the virtually concatenated information structure.

124. The method of claim 123, wherein the path overhead comprises an H4 byte, the method including the step of using the H4 byte for indicating the sequence of the frames.

125. The method of claim 123, wherein the virtually concatenated information structure comprises virtual containers, and wherein the path overhead comprises a J1 byte, the method including the step of using the J1 byte to indicate an order of the virtual containers in the virtually concatenated information structure.

126. The method of claim 123, wherein the path overhead comprises a B3 byte for providing an error indication, the method including the step of correcting, as necessary, the error indication carried in byte B3.

127. A virtually concatenated information structure for carrying data in a frame sequence, comprising: a plurality of frames, and a path overhead, a part of the path overhead comprising means for indicating the frame sequence in the virtually concatenated information structure.

128. The virtually concatenated information structure of claim 127, wherein the path overhead comprises an H4 byte for indicating the frame sequence.

129. The virtually concatenated information structure of claim 127, wherein the virtually concatenated information structure comprises virtual containers, and wherein the path overhead comprises a J1 byte for indicating an order of the virtual containers in the virtually concatenated information structure.

130. The virtually concatenated information structure of claim 127, wherein the path overhead comprises a B3 byte for providing an error indication.

131. The virtually concatenated information structure of claim 127, wherein the virtually concatenated information structure comprises a virtual container four (VC-4) or virtual container three (VC-3) or an administrative unit three (AU3).

132. The virtually concatenated information structure of claim 131, wherein the path overhead comprises an H4 byte and a J1 byte, and wherein the H4 byte and the J1 byte comprise information for controlling alignment of the virtual containers.

133. The virtually concatenated information structure of claim 127, wherein a data signal from outside a network comprises a virtual container two (VC-2) or a virtual container one (VC-1).

134. A network management system for managing data transfer in a virtually concatenated information structure for carrying data in a frame sequence, comprising: a plurality of frames, and a path overhead, a part of the path overhead comprising means for indicating the frame sequence in the virtually concatenated information structure.

135. A tributary interface for data transmission of a virtually concatenated information structure for carrying data in a frame sequence, comprising: a plurality of frames, and a path overhead, a part of the path overhead comprising means for indicating the frame sequence in the virtually concatenated information structure.

136. A network for the transmission of data in a virtually concatenated information structure for carrying data in a frame sequence, comprising: a plurality of frames, and a path overhead, a part of the path overhead comprising means for indicating the frame sequence in the virtually concatenated information structure.